

**City  
of  
YUBA CITY** Utilities Department

Wastewater Treatment Facility  
Water Treatment Plant

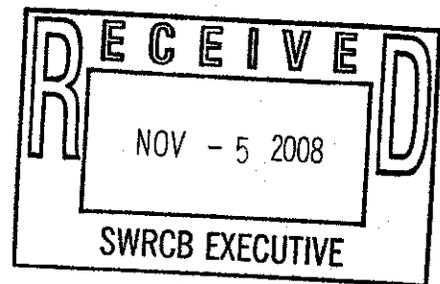
· 302 Burns Drive, Yuba City, CA 95991  
· 701 Northgate Drive, Yuba City, CA 95991

· (530) 822-4639 · FAX (530) 822-4773  
· (530) 822-4636 · FAX (530) 822-4739

November 5, 2008

**BY ELECTRONIC TRANSMISSION:**  
**commentletters@waterboards.ca.gov**

Ms. Jeanine Townsend  
Clerk to the Board  
State Water Resources Control Board  
1001 I Street, 24th Floor [95814]  
P.O. Box 100  
Sacramento, CA 95812-0100  
commentletters@waterboards.ca.gov



Re: *In the Matter of the Petition of the California Sportfishing Protection Alliance (City of Yuba City NPDES Permit): Comments Regarding Draft Order*  
SWRCB/OCC File No. A-1895 – November 18, 2008 Board Meeting

Dear Ms. Doduc and Members of the Board:

The City of Yuba City (Yuba City or the City) appreciates this opportunity to comment on the Draft Order circulated in this matter. Yuba City agrees with much of the draft Order and commends your staff for their efforts. Yuba City has just a few points it wishes to bring to your attention, as follows:

- **Yuba City agrees the inadvertent omission of the mixing zone boundary should be clarified upon remand.**
- **Yuba City agrees the Fact Sheet should be clarified on remand to more fully reflect the derivation of the effluent limits based on dilution by the diffuser, but that it is not necessary to revise those effluent limits. Instead, the maintenance requirements for the diffuser should be revised to reflect the original intent that 40 ports be kept open during low-flow periods.**
- **Because the permit already assumes a discharge to the disposal ponds is the equivalent of a discharge directly to the river and imposes essentially the same effluent limits, no additional monitoring is necessary to determine whether there is a threat to water quality from discharges to the ponds.**

- **The permit should be remanded to allow the Regional Board to reconsider the post-LYRA effluent limits but without constraining the Regional Board's discretion and technical expertise to assess the correct effluent limits. The Regional Board is in the best position to consider the technical process of determining the correct values for 1Q10 and 7Q10, which are the proper basis for determining dilution-based effluent limits.**

## **INTRODUCTION**

On October 25, 2007, the Central Valley Regional Water Control Board (Regional Water Board) adopted Order No. R5-2007-0134, renewing the waste discharge requirements and NPDES Permit No. CA0079260 (Permit) for the City's Wastewater Treatment Facility (WWTF). That permit was adopted following the remand by this Board of the facility's prior permit, Order No. R5-2003-0085. In its remand order, Order WQO 2004-0013, this Board gave specific direction to the Regional Board on several matters. The October 25, 2007, permit directly addressed those issues.

Subsequently, CalSPA filed a Petition for Review (Petition) before the State Water Board pursuant to Water Code section 13320 raising a number of objections to the Permit as issued by the Regional Water Board. The City of Yuba City hereby responds to the State Water Resources Control Board's (State Water Board) Proposed Order in the matter of Petition of California Sportfishing Protection Alliance (CSPA) for the City of Yuba City Wastewater Treatment Plant, Sutter County, Central Valley Water Board on October 6, 2008.

## **DISCUSSION**

### **Issue 1: The permit does not specifically identify the boundary of the mixing zone. (Order Item #1)**

#### **Background:**

In the Permit, the dilution credits are based on technical analysis submitted by the City to the Regional Water Board. During the Permit development, the Regional Board reviewed the mixing zone evaluation and provided the City with comments. The City updated the analysis to address the Regional Water Board's comments and to reflect a revised dataset. The analysis yielded an acute mixing zone set at the point where the plume is completely vertically mixed, which, at the critical flowrates specified in the SIP, occurs within 8.0 feet of discharge (nominally 152 feet upstream of the water fall) and is conservatively calculated to be a 2.8 sec travel time. The chronic mixing zone is truncated at the lip of Shanghai Falls, nominally 160 feet from the outfall. The human health mixing zone is calculated at the complete mix position within 1,176 feet downstream of the outfall.<sup>1</sup> The Permit discusses the analyses performed by the City and review by the Regional Water Board at Attachment F – Fact Sheet pages F-20 through F-26.

<sup>1</sup> Yuba City notes the Regional Board's comment in their response to the Petition that the human health mixing zone extends only to the lip of Shanghai Falls. Yuba City assumes this was a mistake, as the calculated human health mixing zone extends to 1,176 feet beyond the diffuser, which is well below the falls.

**The Draft Order:**

The Draft Order supports the Regional Board's conclusion that mixing zones and dilution credits are appropriate and are supported by the record and that "the 2007 Permit properly allows mixing zones." The Draft Order, however, correctly notes the SIP requires the permit to specify, "the point in the receiving water where applicable criteria/objective must be met." (Draft Order Page 3).

**Yuba City's Position: Yuba City agrees the inadvertent omission of the mixing zone boundary should be clarified upon remand.**

As described in the above section "Mixing Zones and Dilution Credits", the Permit does discuss the locations of the mixing zones at length in Attachment F – Fact Sheet pages F-20 through F-26; however the locations are not included in the mixing zone summary at F-26. Attachment F Section IV.C.2.c should be modified to include the specific mixing zone boundary. The proposed language of remand order Item 1 accomplishes this.

**Issue 2: Diffuser ports (dilution and maintenance) (Order items #2 and #3)**

**Background:**

Yuba City discharges through a 40-port diffuser. Over the 30+ years since the diffuser was constructed, 15 of the 40 ports became partially or fully blocked by large cobblestones moved by high water events. All 40 ports were fully cleared in November 2006 and the diffuser has been maintained annually since then. The 2007 permit requires annual inspections and clearing of the diffuser.

In determining the available dilution, Yuba City's mixing zone analysis considered scenarios with both 25 and 40 ports clear. The mixing zone analysis concluded that when flows exceed 1500 cfs, the dilution with 25 ports clear equals or exceeds the dilution available with 40 ports at critical low flow (approximately 1000 cfs.). (See Attachment A). Thus, the effluent limits, which were calculated based on 40 open ports at critical low flow, provide equal or greater protection with just 25 ports open at flows greater than 1500 cfs.

Yuba City has a diffuser assessment and maintenance program under which it will inspect the diffuser when the river flows fall below 3000 cfs (the earliest an inspection can be performed safely) and to clear any ports that may have been blocked during higher river flows. In this way, Yuba City (and the Regional Board) can be confident that at least 25 ports will be open during high flows, and all 40 ports will be open during low-flow periods.

**Draft Order:**

The Draft Order agrees with the Regional Board's findings that the historic condition of 15 ports being covered occurred over a period in excess of 30 years. It also finds that this condition is not likely to reoccur due to the requirement in the 2007 permit that the City annually assess and maintain the diffuser. The Draft Order appropriately rejects the petitioner's contention that annual inspection and maintenance is insufficient to insure the diffuser remains sufficiently clear to provide adequate dilution. However, the Draft Order finds some ambiguity in the permit with respect to whether the dilution calculations were based on 25 or 40 ports being kept open. It proposes to remand the permit for

clarification and directs the Regional Board to revise the effluent limits if they were based on 40 ports being open at all times, since the permit's maintenance program seems to only require that 25 ports be kept open.

**Yuba City's Position: Yuba City agrees the Fact Sheet should be clarified on remand to more fully reflect the derivation of the effluent limits, but that it is not necessary to revise the effluent limits. Instead, the maintenance requirements should be revised to reflect the original intent that 40 ports be kept open during low-flow periods.**

As correctly stated in the Draft Order, the diffuser has been in the Feather River since the mid-seventies. In the last 30+ years since the diffuser was installed, 15 of the 40 individual ports had been covered by large cobblestones moved there by high water events.

The City agrees with the State Board's finding that at lower dry weather flows, it is highly unlikely that sediment movement would cover ports since it took many years of higher flows to cover the ports. In addition, the historic condition of 15 ports becoming covered leaving 25 ports open is not likely to reoccur due to the City's annual diffuser assessment and maintenance program, which has been incorporated as a requirement into the 2007 permit. Inspections since November 2006 confirm that no significant sediment movement has taken place.

The yearly assessment and maintenance of the diffuser ensures 40 ports are open as the river flowrate drops below 3,000 cfs; thereby ensuring the dilution is always greater than the values used for effluent limitation calculations. As the maintenance of the diffuser is required to occur as the river recedes to 3,000 cfs following April 1<sup>st</sup> of each year, all 40 diffuser ports will be open before the Feather River flowrate drops to critical low levels. The inspection and maintenance schedule was developed to ensure that 25 ports of the diffuser would be clear at all times and that 40 ports would be clear prior to the occurrence of critical low flows.

The effluent limitations based on dilutions corresponding to a 40 port diffuser at critical flowrates are protective of receiving water beneficial uses so long as the diffuser maintenance occurs as the river flowrates drop to less than 3,000 cfs. If the river flowrate never drops below 3,000 cfs in a given the year, more dilution than the critical condition of 40-ports open and 1Q10 or 7Q10 flowrates will be available as long as 25 or more ports are open on the diffuser.

The Permit as written, with the critical flowrate dilutions and diffuser maintenance schedule, ensure protection of the receiving water beneficial uses. The effluent limitations are correctly calculated in the Permit and do not need to be modified. Points 2 and 3 of the permit remand should be modified as follows:

**"Modify the diffuser maintenance requirement to insure that 40 ports are open whenever Feather River flow falls below 1500 cfs."**

### **Issue 3: Discharges to the disposal ponds (Order Item #4)**

#### **Background:**

On occasion, Yuba City will discharge to a series of disposal ponds located within the flood plain of the river, rather than discharging directly to the river through the diffuser. The ponds are designated as Discharge Point 002; the diffuser is Discharge Point 001. The facility samples for discharges to either Discharge Point 001 or Discharge Point 002 at the same location, before the valve which diverts the flow to one or the other discharge point. The permit establishes identical effluent limits for the two discharge points with the exception of chlorine residual, which dissipates quickly and so is not considered a threat to the river when discharged to the ponds. Thus, under the 2007 permit as currently written, a plant upset which results in a diversion to the ponds is a violation of the permit, whether or not the effluent actually reaches the river.

#### **Draft Order:**

The Draft Order finds that monitoring the plant's effluent before it is diverted to Discharge Point 001 or Discharge Point 002 is appropriate when the facility is operating properly, but that the permit should require monitoring of Discharge Point 002 if the plant suffers an upset that is diverted to the ponds that could pose a threat to the water quality of the river.

**Yuba City's Position: Because the permit already assumes a discharge to the ponds is the equivalent of a discharge directly to the river and imposes essentially the same effluent limits, no additional monitoring is necessary to determine whether there is a threat to water quality from discharges to the ponds.**

Because it is not possible to sample the ponds safely during floods when the ponds are subject to inundation, the permit essentially assumes the impact to the river is the same regardless of whether the discharge goes directly to the river (Discharge Point 001) or to the percolation ponds (Discharge Point 002). The Permit requires monitoring of effluent discharged to the ponds at the same location and frequency as effluent discharged to the river. Moreover, the effluent limits under the permit are the same (except for chlorine residual), regardless of whether the effluent is directed to the river or to the ponds. Thus, the permit treats a plant upset as a threat to river water quality whether the effluent goes to the river or to the ponds. No additional monitoring of the ponds themselves is necessary or justified during times of upset, since the effluent will have already been monitored and any limits exceeded will have triggered a violation.

In addition, the permit requires Yuba City to conduct a study to determine whether there should be different conditions for discharges to the ponds than for the diffuser. (Permit Section IV C.2.(b)) The purpose of the study is to consider potential concentration of effluent constituents due to evaporation as well as to evaluate the dilution that occurs on the rare occasion that the ponds are flooded by the river. This study has now been completed and has been submitted to the Regional Board. If the Regional Board believes the study justifies a change in effluent limits or a change in operational parameters of the ponds, the Regional Board can reopen the permit. It would be inappropriate for the State Board to curtail the Regional Board's discretion this time without the benefit of the study's results. The State Board should not remand to require the Regional Board to impose additional monitoring requirements at this time. Point 4 of

the remand section of the Draft Order should be deleted or modified to allow the Regional Board to determine appropriate monitoring requirements.

**Issue 4: Impact of the Lower Yuba River Accord (LYRA) on dilution calculations (Order Item #5)**

**Background:**

When the permit was adopted, the Lower Yuba River Accord (LYRA) had been proposed but not yet been adopted. The permit, however, anticipated there would be an additional 500 cfs in the river during low flow times once the LYRA was adopted. The permit prospectively established new effluent limits based on this anticipated additional flow.

**Draft Order:**

The Draft Order correctly identifies an error in the assumptions that were used to derive the prospective, post-LYRA effluent limits. However, the draft order erroneously relies on a 1-in-100-year-recurrence schedule (rather than the 1-in-10-year-recurrence required by the SIP) to conclude there will be no additional flow available for dilution under the LYRA. Thus, the Draft Order improperly directs the Regional Board to impose the permit's pre-LYRA limits as post-LYRA limits as well.

**Yuba City's Position: The permit should be remanded to allow the Regional Board to reconsider the post-LYRA effluent limits but without constraining the Regional Board's discretion and technical expertise to assess the correct effluent limits. The Regional Board is in the best position to consider the technical process of determining the correct values for 1Q10 and 7Q10, which are the proper basis for determining dilution-based effluent limits.**

Dilution-based effluent limits are established based on 1Q10 (lowest daily flow on a 10-year recurrence) and 7Q10 (7-day average low flow based on a ten-year recurrence). (SIP, Section 1.4.2.1 "Dilution Credits," and Table 3, page 14). In concluding there will be no additional flow under the LYRA, the Draft Order cites to the wrong schedule in the LYRA. The Draft Order cites to State Water Board Order WR 2008-0025 (LYRA), Appendix, Figure 2 Fisheries Agreement Exhibit 1, in-stream Flow Requirements, "Schedule 6" water year conditions. That schedule lists the minimum flows at 150 cfs during certain months; however, in Figure 3 Frequency of Occurrence of Fisheries Flow Year Types, Schedule 6 is listed as an occurrence of 99 percentile dry year, or a one-in-100-year occurrence. Again, the critical low flows specified in the SIP correspond to the 90 percentile dry years, or the one-in-10-year occurrence. Thus, the flowrates applicable to determine the critical low flow conditions for permitting purposes are reflected in Schedule 4, not in Schedule 6. The minimum flowrate listed in Figure 2 corresponding to Schedule 4 is 400 cfs during certain months, which is an increase in historic Yuba River critical low flowrates on a ten-year recurrence interval.

Additionally, the LYRA, at pages 56-57, specifies that the minimum flow requirements shall be maintained as measured by a 5-day running average of average daily stream flows, with instantaneous flows never less than 90 percent of the specified flow requirements. Instantaneous flows will not be less than the applicable flow requirements specified in the schedules for more than 48 consecutive hours. Following these criteria, the minimum 1-day flowrate for Schedule 4 would be 360 cfs corresponding to

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maintaining the instantaneous flowrate at 90% of 400 cfs for an entire day. The minimum 7-day flowrate allowable under Schedule 4 of the LYRA would occur when repeating the 5-day daily average flowrate pattern of: 360 cfs for two days (48 hours), followed by a daily average of 400 cfs, followed by a 360 cfs day, and the last day of 520 cfs. Under the minimum flow pattern, the 5-day running average of daily flowrates would be 400 cfs with the minimum 7-day average equaling 388 cfs.

Finally, river flow at Yuba City's diffuser is a combination of flows in both the Yuba River and the Feather River. Determining the statistical low flow at the diffuser is not simply a function of flow in the Yuba River, but also depends on flows in the Feather River. These flows are not directly related. Thus, determining 1Q10 and 7Q10, the proper basis for establishing dilution-based effluent limits, requires a statistical analysis of the *combined* flows. The Draft Order has not performed this analysis. It would be premature to determine post-LYRA effluent limits before this analysis has been performed. The permit should be remanded to reconsider the post-LYRA effluent limits, but without constraining the Regional Board's discretion to conduct the appropriate analysis.

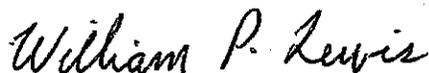
Yuba City proposes the following language for Point 5 of the remand order:

"Reconsider the effect of the adopted Lower Yuba River Accord, State Water Board Order WR 2008-0025, on flows at the Yuba City diffuser and reevaluate the post-LYRA effluent limits."

#### **CONCLUSION**

Yuba City appreciates the careful consideration given to this matter by the State Board and its staff. With the few minor adjustments noted above, Yuba City supports the State Board's decision.

Very truly yours,

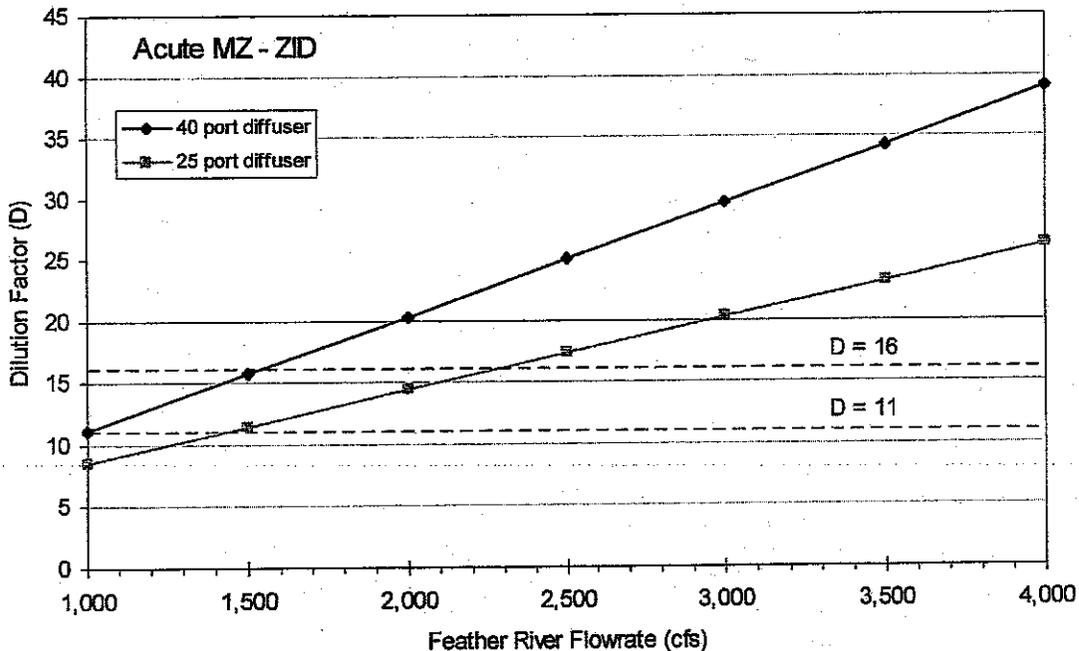


William P. Lewis  
Utilities Director

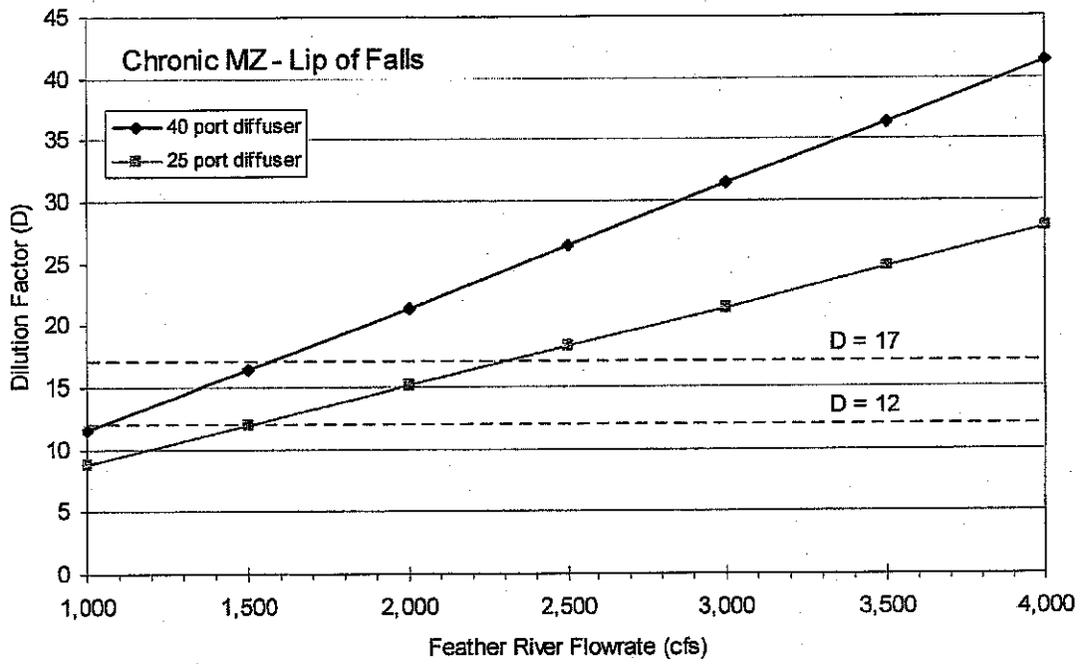
**Attachment A: Comparison of Dilution and River Flow (25 and 40 Ports)**

The dilution for the City's discharge is a function of the diffuser size and shape, effluent flowrate, and river flowrate. The dilution credits listed in the Permit are based on 40 ports open on the diffuser, critical high effluent flowrates, and critical low river flowrates. As river flowrates increase, the dilution increases. Fewer ports open on the diffuser will result in lower dilution compared to the uncovered diffuser at a given river flowrate. Furthermore, as the river flowrate increases above the critical low flows, dilution factors increase.

Dilution factors calculated using the CORMIX model for the discharge are plotted in Figure 1 (acute) and Figure 2 (chronic) for Feather River flowrates ranging from 1,000 to 4,000 cfs. For the historic condition of a diffuser with 25 ports open and a Feather River flowrate of 2,500 cfs, the acute dilution at complete vertical mixing is dilution factor "D"  $D=17.3$  and for the diffuser with 25 ports open and a Feather River flowrate of 3,000 cfs, the acute dilution at complete vertical mixing is  $D=20.3$ . As can be seen from Figure 1 and 2, in both cases these dilution factors are greater than the dilution provided by the diffuser with 40 ports open at 1000 cfs. In other words, the dilution provided by the diffuser with up to 15 ports covered at flows above 1500 cfs will provide equal or greater dilution than the full 40 port diffuser at the critical low river flowrates on which permit limitations are based.



**Figure 1: Acute Dilution Factors for 40-Port and 25-Port Diffusers for Feather River Flowrates.**

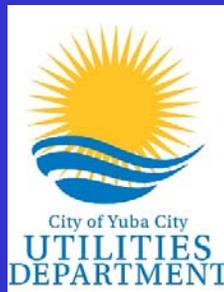


**Figure 2: Chronic Dilution Factors for 40-Port and 25-Port Diffusers for Feather**

# City of Yuba City NPDES Permit

State Water Resources Control  
Board

November 18, 2008



## Order Discussion Topics

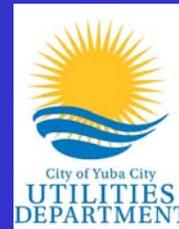
- Mixing Zone Boundary
- Dilution and Maintenance of Outfall Diffusers
- Discharge to Disposal Ponds
- Impact of Lower Yuba River Accord (LYRA) on Dilution Calculation





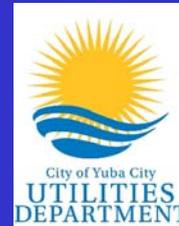
## Monitoring and Maintenance of Outfall Diffusers

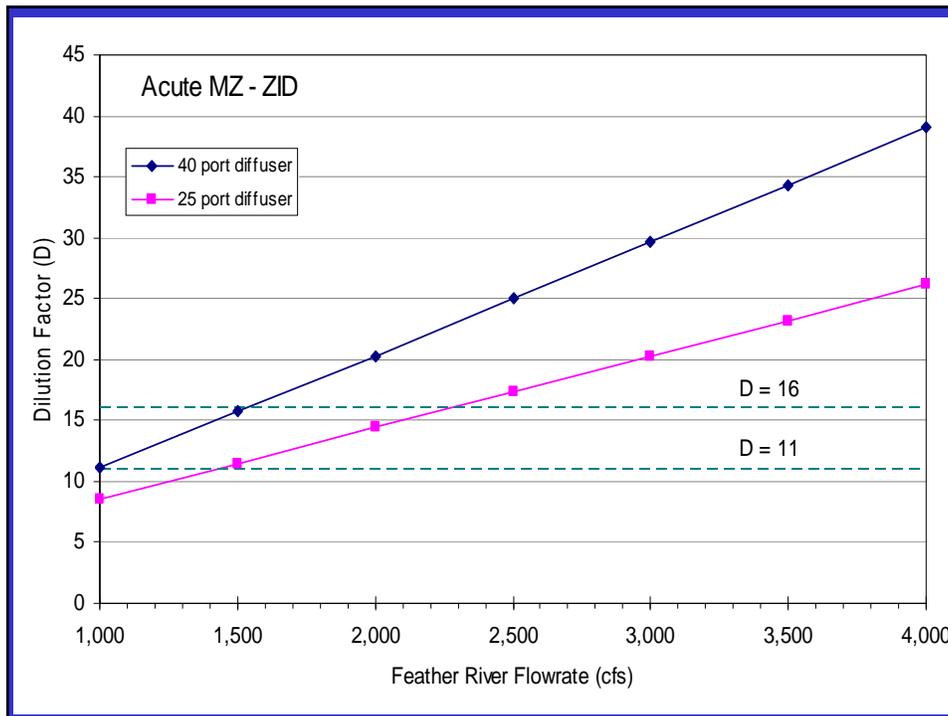
- Fact sheet thoroughly discusses mixing zone calculations
- Concur that mixing zone boundary be clearly defined in permit



## Monitoring and Maintenance of Outfall Diffusers

- Diffuser cleared November 2006
  - Inspections since required minimal maintenance
  - Permit requires annual inspection before low flows
- Dilution with 25 ports at 1500 cfs provides more dilution than 40 ports at 1000 cfs

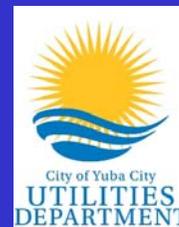




## Monitoring and Maintenance of Outfall Diffusers

- Reword Order Points 2 & 3:

“Modify the diffuser maintenance requirements to insure 40 ports whenever the Feather River flow falls below 1500 cfs”





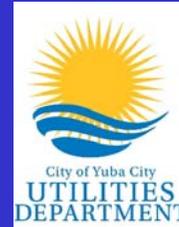
## Monitoring of Discharge to Disposal Ponds

- The same limits apply to disposal ponds and Feather River
  - except chlorine residual
- Historically discharge to ponds does not occur in winter months when overtopping could occur



## Monitoring of Discharge to Disposal Ponds

- Monitoring plan is currently same regardless of discharge location
- Permit exceedence detected regardless of discharge location



## Monitoring of Discharge Location Effluent Wastewater Ponds

- Permit requires submission of a pond study
- Study was submitted to the Regional Board



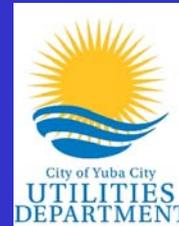
## Monitoring of Discharge Location Effluent Wastewater Ponds

- City Recommendation:
  - Remove Point 4 of the draft Order  
or
  - Modify to allow the Regional Board  
to determine appropriate  
monitoring requirements



## Impact of Lower Yuba River Accord (LYRA)

- Order correctly Identifies an assumption error with LYRA minimum flows
- Order references low flow event with 1:100 year return frequency
- Minimum flow events on Yuba River occur in Summer
- Higher flows occur Fall through Spring
- Feather River upstream flows typically higher in summer and lower in Fall through Spring



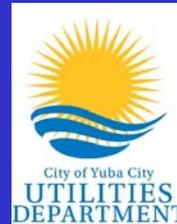
## Impact of Lower Yuba River Accord (LYRA)

- LYRA has a requirement that instantaneous flow rate never be less than 90% of required flow, but must meet 5 day running average
- If required flow is 400 cfs – can range between 360 and 520 cfs to meet 5 day running average of 400



## Impact of Lower Yuba River Accord (LYRA)

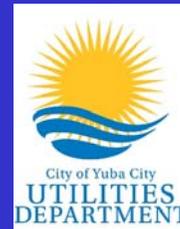
- SIP establishes dilution credits based on 1Q10 and 7Q10
- Determination of 1Q10 and 7Q10 requires determining Feather River and Yuba River flows
- Requires a statistical analysis
- Draft Order has not performed this analysis



## Impact of Lower Yuba River Accord (LYRA)

- Proposed Language for Item 5

“Reconsider the effect of the adopted LYRA on flows at the Yuba City diffuser and reevaluate the post-LYRA effluent limits”



Questions







Feather  
and  
Yuba  
River  
October  
1996

Feather  
and  
Yuba  
River  
January  
1997



Pond Location  
17 - 26 feet  
under water